CLAIMS:

1. A capacitor fabrication method comprising:

forming a first capacitor electrode over a substrate;

atomic layer depositing an insulative barrier layer to oxygen diffusion over the first electrode;

forming a capacitor dielectric layer over the first electrode; and

forming a second capacitor electrode over the dielectric layer.

2. The method of claim 1 wherein the atomic layer deposited barrier layer has a thickness of less than about 12 Angstroms.

3. The method of claim 1 wherein the atomic layer deposited barrier layer has a thickness of less than about 6 Angstroms.

4. The method of claim 1 wherein the atomic layer deposited barrier layer contacts the dielectric layer.

5. The method of claim 1 wherein the atomic layer deposited barrier layer comprises Al_2O_3.

6. The method of claim 1 wherein the atomic layer deposited barrier layer exhibits a K factor of greater than about 7 at 20 °C.

7. The method of claim 1 wherein the atomic layer deposited barrier layer exhibits a K factor of about 10.

8. The method of claim 1 wherein at least one of the first or second electrodes comprises polysilicon and the dielectric layer comprises oxygen.

9. The method of claim 1 wherein the dielectric layer comprises Ta_2O_5 or barium strontium titanate.

10. The method of claim 1 wherein the dielectric layer is over the barrier layer.

11. The method of claim 10 further comprising atomic layer depositing another insulative barrier layer to oxygen diffusion over the dielectric layer.

12. The method of claim 1 wherein the forming the first and second electrodes and the dielectric layer occur by other than atomic layer deposition.

13. A capacitor fabrication method comprising:

forming a first capacitor electrode over a substrate;

chemisorbing a layer of a first precursor at least one monolayer thick over the first electrode;

chemisorbing a layer of a second precursor at least one monolayer thick on the first precursor layer, a chemisorption product of the first and second precursor layers being comprised by a layer of an insulative barrier material;

forming a capacitor dielectric layer over the first electrode; and

forming a second capacitor electrode over the dielectric layer.

14. The method of claim 13 wherein the first and second precursor layers each consist essentially of a monolayer.

15. The method of claim 13 wherein the first and second precursor layers each comprise substantially saturated monolayers.

16. The method of claim 13 wherein the first and second precursor each consist essentially of only one chemical species.

17. The method of claim 13 wherein the first precursor is different from the second precursor.

18. The method of claim 13 wherein the first precursor comprises H_2O and the second precursor trimethyl aluminum.

19. The method of claim 13 wherein the dielectric layer is over the barrier layer, further comprising chemisorbing additional alternating first and second precursor layers before forming the dielectric layer.

20. The method of claim 19 wherein the barrier layer has a thickness and a density effective to reduce oxidation of the first electrode by oxygen from over the barrier layer.

21. The method of claim 19 wherein the barrier layer has a thickness of less than about 12 Angstroms.

22. The method of claim 19 wherein the barrier layer has a thickness of less than about 6 Angstroms.

23. The method of claim 13 wherein the atomic layer deposited barrier layer contacts the dielectric layer.

24. The method of claim 13 wherein the barrier layer comprises Al_2O_3.

25. The method of claim 13 wherein the barrier layer exhibits a K factor of greater than about 7 at 20 °C.

26. The method of claim 13 wherein the barrier layer exhibits a K factor of about 10.

27. A capacitor fabrication method comprising:

forming an opening in an insulative layer over a substrate, the opening having sides and a bottom;

forming a layer of polysilicon over the sides and bottom of the opening;

converting the polysilicon layer to a first capacitor electrode comprising hemispherical grain polysilicon;

conformally forming an insulative barrier layer on the first electrode comprising Al_2O_3, the barrier layer being sufficiently thick and dense to reduce oxidation of the first electrode by oxygen diffusion from over the barrier layer;

forming a capacitor dielectric layer comprising oxygen on the barrier layer; and

forming a second capacitor electrode over the dielectric layer.

28. The method of claim 27 wherein the forming a barrier layer comprises atomic layer depositing a barrier layer to oxygen diffusion.

29. The method of claim 27 wherein the forming the barrier layer comprises:

chemisorbing a layer of a first precursor at least one monolayer thick over the first electrode;

chemisorbing a layer of a second precursor at least one monolayer thick on the first precursor layer, a chemisorption product of the first and second precursor layers being comprised by the barrier layer.

30. The method of claim 27 wherein the barrier layer has a thickness of less than about 12 Angstroms.

31. The method of claim 27 wherein the barrier layer exhibits a K factor of greater than about 7 at 20 °C.

32. A capacitor construction comprising a first capacitor electrode over a substrate, a capacitor dielectric layer over the barrier layer, a second capacitor electrode over the dielectric layer, and an atomic layer deposited insulative barrier layer to oxygen diffusion between the first and second electrodes.

33. The method of claim 32 wherein the barrier layer has a thickness of less than about 12 Angstroms.

34. The method of claim 32 wherein the barrier layer comprises Al_2O_3.

35. The method of claim 32 wherein the barrier layer exhibits a K factor of greater than about 7 at 20 °C.

36. A capacitor construction comprising:

a first capacitor electrode over a substrate;

an insulative barrier layer to oxygen diffusion over the first electrode, the barrier layer comprising a chemisorption product of first and second precursor layers;

a capacitor dielectric layer over the first electrode; and

a second capacitor electrode over the dielectric layer..

37. The method of claim 36 wherein the barrier layer has a thickness of less than about 12 Angstroms.

38. The method of claim 36 wherein the barrier layer comprises Al_2O_3.

39. The method of claim 36 wherein the barrier layer exhibits a K factor of greater than about 7 at 20 °C.